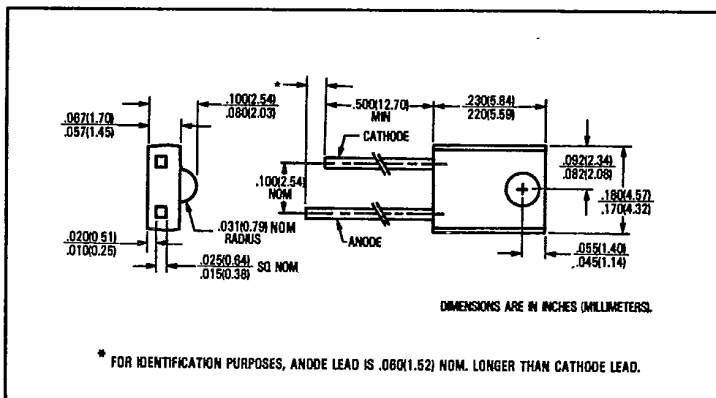
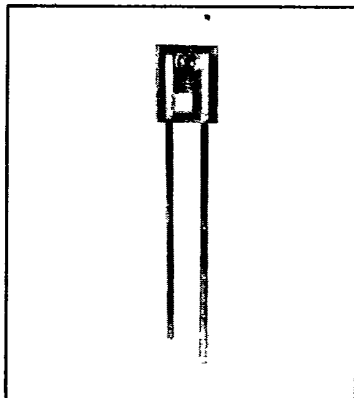


## GaAlAs Plastic Infrared Emitting Diodes

### Types OP240SL, OP240SLC, OP240SLB, OP240SLA



#### Features

- Up to 2.5 times the radiant intensity of the GaAs equivalent at the same drive current
- Selected to specific on-line intensity and radiant intensity ranges
- Mechanically and spectrally matched to the OP550 series of phototransistors and the OP560 series of photodarlington

#### Description

The OP240SL series consist of gallium aluminum arsenide infrared emitting diodes mounted in low cost, clear plastic side-looking packages. Gallium aluminum arsenide features a significant increase in the radiated output of gallium arsenide at the same forward current. Also, with a wavelength centered at 875 nanometers, it more closely matches the spectral response of silicon phototransistors. For additional information on spectral emission characteristics, please refer to the OP550 data sheet.

The OP240SL is equivalent to TRW's earlier part number OP240.

#### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

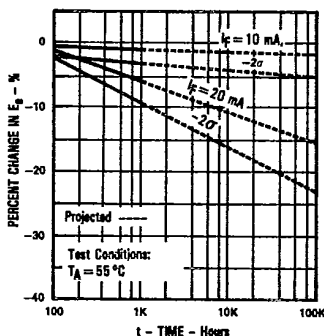
Reverse Voltage	2.0 V
Continuous Forward Current	50 mA
Peak Forward Current (Pulse Width = 1 $\mu\text{sec}$ , 300 pps)	3.0 A
Storage and Operating Temperature Range	$-40^\circ\text{C}$ to $+100^\circ\text{C}$
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron) <sup>(1)</sup>	240°C
Power Dissipation	100 mW <sup>(2)</sup>

#### Notes:

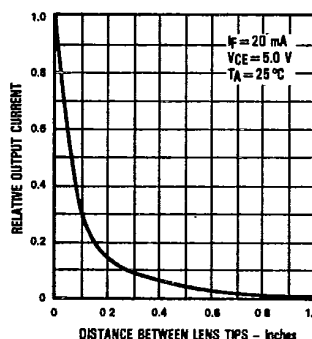
- (1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering.
- (2) Derate linearly 1.33 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3)  $E_e(\text{APT})$  is a measurement of the average apertured radiant incidence upon a sensing area 0.180" (4.57 mm) in diameter perpendicular to and centered on the mechanical axis of the lens, and 0.653" (16.6 mm) from the lens tip.  $E_e(\text{APT})$  is a measurement of the average radiant intensity within the cone formed by the above conditions.  $E_e(\text{APT})$  is not necessarily uniform within the measured area.

#### Typical Performance Curves

##### Percent Changes in Radiant Intensity vs Time



#### Coupling Characteristics of OP240SL and OP550



## Types OP240SL, OP240SLC, OP240SLB, OP240SLA

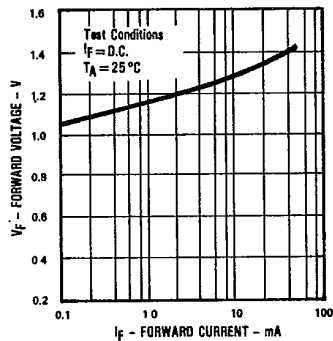
T-41-13

Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

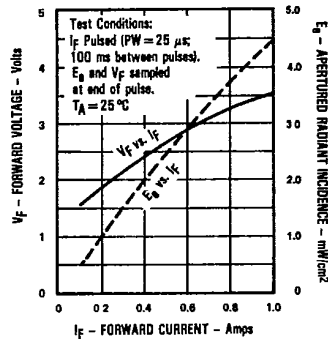
Symbol	Parameter		Min.	Typ.	Max.	Units	Test Conditions
P <sub>O</sub>	Radiant Power Output	OP240SL		1.0		mW	I <sub>F</sub> = 40 mA
E <sub>a</sub> (APT) <sup>(3)</sup>	Apertured Radiant Incidence	OP240SL	0.050			mW/cm <sup>2</sup>	I <sub>F</sub> = 20 mA
		OP240SLC	0.20		0.86	mW/cm <sup>2</sup>	I <sub>F</sub> = 20 mA
		OP240SLB	0.40		1.20	mW/cm <sup>2</sup>	I <sub>F</sub> = 20 mA
		OP240SLA	0.60			mW/cm <sup>2</sup>	I <sub>F</sub> = 20 mA
V <sub>F</sub>	Forward Voltage				1.80	V	I <sub>F</sub> = 20 mA
I <sub>R</sub>	Reverse Current				100	μA	V <sub>R</sub> = 2.0 V
λ <sub>p</sub>	Wavelength at Peak Emission			875		nm	I <sub>F</sub> = 20 mA
Δ	Spectral Bandwidth Between Half Power Points			80		nm	I <sub>F</sub> = 20 mA
Δλ <sub>p</sub> /ΔT	Spectral Shift with Temperature			+0.18		nm/°C	I <sub>F</sub> = Constant
θ <sub>HP</sub>	Emission Angle at Half Power Points			40		Deg.	I <sub>F</sub> = 20 mA
t <sub>r</sub>	Output Rise Time			550		ns	I <sub>F</sub> (PK) = 20 mA, PW = 10.0 μs, D.C. = 10.0%
t <sub>f</sub>	Output Fall Time			225		ns	

## Typical Performance Curves

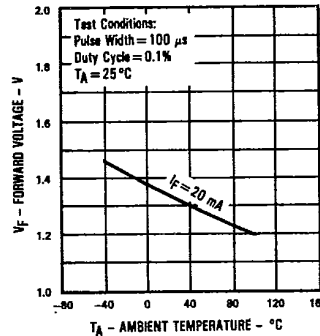
Forward Voltage vs Forward Current



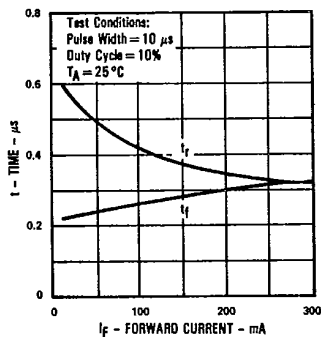
Forward Voltage and Radiant Incidence vs Forward Current



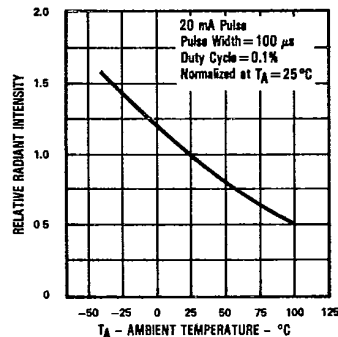
Forward Voltage vs Ambient Temperature



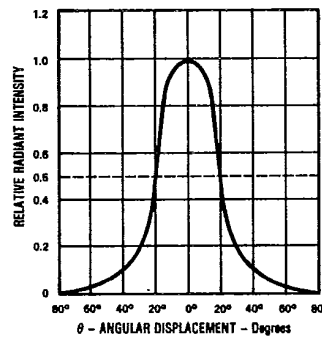
Rise Time and Fall Time vs Forward Current



Relative Radiant Intensity vs Ambient Temperature



Relative Radiant Intensity vs Angular Displacement



TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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